UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/776,377	02/02/2001	Noam Sorek	03022/36945	8086

4743	7590	01/05/2004	

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ART UNIT	PAPER NUMBER
2625	

DATE MAILED: 01/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>02 February 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

13)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

    a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4</u>.

4) ☐ Interview Summary (PTO-413) Paper No(s). _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 1-4, 9-13 and 18 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Arnold (US 5,929,866), in view of Okada (US 5,852,468) and Koga et

al. (US. 5,848,185).

3.   Regarding claim 1, Arnold discloses

- o   receiving initial signal responsive to the image
  [Col. 4, lines 17-19]
- o   calculating an adjusted signal for each pixel of the plurality of pixels responsive to
  the initial signal of the pixel and to at least one of the background color and the
  non-background color
  [Col. 2, lines 59-62.]

Arnold fails to expressly disclose that the image is formed on a plurality of pixels in a
color mosaic image sensor nor the determination of the background/non-background
colors of the image responsive to the initial signals. However, Okada teaches the use
of a color mosaic image sensor that comprises pixels of three colors (R, G and B). [Fig.
2; Fig. 8, numeral 1; Col. 8, line 62 – Col. 9, line7.] In addition, Koga et al. teaches the
determination of the background/non-background colors of the image. [Fig. 8; Col. 10,
line 13 – Col. 13, line 22. Note that the outputs in Fig. 8 are indications of whether the
segment just processed is or is not a background region and step S103 determines the
region's color.]

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to use Okada's 1-chip color video camera and Koga et al.'s

background/non-background region/color determination approach with the invention of

Arnold so as to minimize attenuation of gains and the difference between the frequency

characteristics of the R and B signals and those of the G signals [Okada. Col. 5, line 63

– Col. 6, line 4] as well as to carry out the required background/non-background

region/color determination operation that is inherent but not expressly described in

Arnold.

4.   Regarding claim 2, the combined invention of Arnold, Okada and Koga et al.

further teaches:

- o   the color mosaic sensor comprises pixels of at least two specific colors
  [Okada: Fig. 2; Fig. 8, numeral 1; Col. 8, line 62 – Col. 9, line7.]
- o   determining the background color comprises locating a background region of the
  image responsive to the initial signals of the pixels of at least one of the specific
  colors, and wherein determining the non-background color comprises locating a
  nonbackground region of the image responsive to the initial signals of the pixels
  of the at least one of the specific colors
  [Koga et al.: Fig. 8; Col. 10, line 13 – Col. 13, line 22. Note that the outputs in
  Fig. 8 are indications of whether the segment just processed is or is not a
  background region and step S103 determines the region's color.]

5.   Regarding claim 3, the combined invention of Arnold, Okada and Koga et al.

further teaches:

- o   determining the background color comprises determining one or more
  background values responsive to the initial signals of the pixels of the at least two
  specific colors in the background region, and wherein determining the non-
  background color comprises determining one or more nonbackground values
  responsive to the initial signals of the pixels of the at least two specific colors in
  the non-background region

[Koga et al.: Fig. 8; Col. 10, line 13 – Col. 13, line 22. Note that the outputs in Fig. 8 are indications of whether the segment just processed is or is not a background region and step S103 determines the region's color.]

6. Regarding claim 4, the combined invention of Arnold, Okada and Koga et al.

further teaches:

- o calculating the adjusted signal for each pixel comprises determining the adjusted signal responsive to the one or more background values and the one or more non-background values
  [Arnold: Col. 2, lines 59-62.]

7. Regarding claim 9, it is rejected because the combined invention of Arnold,

Okada and Koga et al. further teaches:

- o forming an image comprising a first plurality of areas, each area comprising a respective background color and a respective non-background color,
  [Koga et al.: Fig. 1, numeral 5001.]
- o on a second plurality of pixels in a color mosaic image sensor
  [Okada: Fig. 2; Fig. 8, numeral 1; Col. 8, line 62 – Col. 9, line7.]
- o receiving from each of the second plurality of pixels a respective initial signal responsive to the image
  [Arnold: Col. 4, lines 17-19]
- o determining which of the second plurality of pixels correspond to each area responsive to the background color and non-background color of each area; and determining for each area the respective background color of the image responsive to the initial signals; and
  determining for each area the respective non-background color of the image responsive to the initial signals;
  [Koga et al.: Fig. 8; Col. 10, line 13 – Col. 13, line 22. Note that the outputs in Fig. 8 are indications of whether the segment just processed is or is not a background region and step S103 determines the region's color.]
- o calculating an adjusted signal for each pixel of the second plurality of pixels responsive to the initial signal of the pixel and to at least one of the first plurality of background colors and the first plurality of non-background colors.
  [Arnold: Col. 2, lines 59-62.]

8.   Claims 10-13 and 18, being the apparatus claims corresponding to clams 1-4

and 9, respectively, are similarly analyzed and rejected as per their respective claims 1-

4 and 9.

9.   Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arnold

(US 5,929,866), Okada (US 5,852,468) and Koga et al. (US. 5,848,185) as applied to

claims 1-4 and 9 above, and further in view of Loushin et al. (US 6,462,835).

Regarding claim 5, the combined invention of Arnold, Okada and Koga et al. teaches

everything except for the following, which Loushin et al. teaches

- o   forming a calibration image on the color mosaic image sensor, and wherein
  calculating the adjusted signal for each pixel comprises determining one or more
  correction factors for the sensor responsive to the calibration image and
  calculating a corrected value for each pixel responsive to the one or more
  correction factors
  [Fig. 1, numerals 12-22; Col. 3, lines 34-63]

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the combined invention of Arnold, Okada and Koga et al.

by generating correction data basing on, among other things, calibration data generated

from calibration images so as to correct problems such as hue shift caused by lighting

effects.

10.   Claims 6, 8, 15 and 17 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Arnold (US 5,929,866), Okada (US 5,852,468) and Koga et al. (US.

5,848,185) as applied to claims 1-4 and 9 above, and further in view of Kamada et al.

(US 6,347,156).

11.   Regarding claim 6, the combined invention of Arnold, Okada and Koga et al.

teaches everything except for the following, which Kamada et al. teaches:

   o   calculating a plurality of sub-pixel resolution signals for each pixel responsive to a
       level of the initial signal of the pixel
       [Fig. 3A, numeral 20; Col. 5, lines 60-63. Note that each pixel in the color
       mosaic image sensor of the Application is responsive to only one of the primary
       colors (e.g., R, G or B). Therefore the response at each individual pixel can be
       considered as in "gray" scale.]

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the combined invention of Arnold, Okada and Koga et al.

by calculating sub-pixels as taught by Kamada et al. so that in document processing

applications characters can be prevented from being defaced after binarization

[Kamada et al., Col. 3, lines 17-25].

12.   Regarding claim 8, the combined invention of Arnold, Okada and Koga et al.

teaches everything except for the following, which Kamada et al. teaches

   o   implementing a process of binarization of the image and utilizing the binarization
       to perform optical character recognition (OCR) on at least a portion of the image
       [Fig. 1A, numerals 172-173; Col. 2, lines 5-28.]

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the combined invention of Arnold and Okada by

binarizing the image and carrying out character recognition as taught by Kamada et al.

so that in document processing applications the information contents of interest

(characters in this case) can be successfully extracted.

13.   Claims 15 and 17, being the apparatus claims corresponding to clams 6 and 8,

respectively, are similarly analyzed and rejected as per their respective claims 6 and 8.

14.   Claim 7 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Arnold (US 5,929,866), Okada (US 5,852,468), Koga et al. (US. 5,848,185) and

Kamada et al. (US 6,347,156) as applied to claim 6 above, and further in view of Hertz

et al. (US 6,366,696).

15.   Regarding claim 7, the combined invention of Arnold, Okada, Koga et al. and

Kamada et al. teaches everything except for the following, which Hertz et al. teaches

- o   identifying one or more straight line segments within the image
      [Abstract; Fig. 2, numeral 34. Note that bar codes are made of straight lines.]

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the combined invention of Arnold, Okada, Koga et al. and

Kamada et al. by detecting straight lines as taught by Hertz et al. so that in applications

such as document or barcode processing the contents of interest such as preprinted

barcode identifying the document or the alignment marks can be identified.

16.   Claim 16, being the apparatus claims corresponding to clam 7, is similarly

analyzed and rejected as per claim 7.

17.   Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arnold

(US 5,929,866), Okada (US 5,852,468), Koga et al. (US. 5,848,185) and Loushin et al.

(US 6,462,835) as applied to claims 5 above, and further in view of Buckley et al. (US

5,969,756).

Regarding claim 14 (whose parent claim 10 has been similarly analyzed and rejected

based on Arnold, Okada and Koga et al. as per claim 1 as discussed in Paragraph 10

above), the combined invention of Arnold, Okada, Koga et al. and Loushin et al. teaches

everything (as per the analysis of claim 5, which is a method claim corresponding to

claim 14 in every way except for the specific calibration pattern used) except for the

following, which Buckley et al. teaches

- o Comprising a calibration grid which forms a calibration image on the color mosaic
  image sensor
  [Fig. 11; Col. 7, lines 13-28]

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the combined invention of Arnold, Okada, Koga et al. and

Loushin et al. by using a grid for generating the calibration image as taught by Buckley

et al. since such pattern can be easily and accurately produced by computer-aided

design (CAD) methods and further by photo plotting the design on high stability

photographic film.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yubin Hung whose telephone number is (703) 305-1896. The examiner can normally be reached on 7:30 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (703) 308-5246. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

Yubin Hung
December 29, 2003

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